

REMARKS

Claims 1 to 24 are pending in the case. Claim 13 has been amended to correct an informality. The Examiner's reconsideration of the rejection is respectfully requested in view of the amendment and remarks.

Claims 1 to 24 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Fukunaga, U.S. Patent No. 6,346,940. The Examiner stated essentially that Fukunaga teaches or suggests all the limitations of claims 1 to 24.

Claim 1 claims, *inter alia*, "determining a graphics guide for positioning an instrument; and rendering the graphics guide such that an appearance of at least one portion of the graphics guide is modulated with respect to at least one of space and time." Claim 13 recites, *inter alia*, "a graphics guide generator for generating a graphics guide for positioning an instrument; and a rendering device for rendering the graphics guide such that an appearance of at least one portion of the graphics guide is modulated with respect to at least one of space and time."

Fukunaga teaches guiding markers are used to indicate a direction in which either a virtual endoscope or an actual endoscope should proceed. (See Col. 8, lines 1 to 3.) Fukunaga does not teach, "a graphics guide for positioning an instrument" as claimed in claims 1 and 13. That is, Fukunaga teaches that a direction is indicated. However, a direction and a position are distinct. An instrument could take any number of positions while moving in an indicated direction. Fukunaga does not teach or suggest a guide for "positioning an instrument", essentially as claimed in claims 1 and 13. Accordingly, Fukunaga fails to teach or suggest every limitation of claims 1 and 13.

In addition, Fukunaga does not teach or suggest, “at least one portion of the graphics guide is modulated with respect to at least one of space and time” as claimed in claims 1 and 13. With respect to this limitation, the Examiner stated that, “it would have been obvious to one of ordinary skill in the art at the time of the invention that as the virtual endoscope is moved about the image the graphics guide would be changed to represent the portion of the image the endoscope is occupying.” However, even assuming, arguendo, that an image of a graphics guide changes to represent a portion of an image an endoscope is occupying as the endoscope is moved, this does not teach or suggest “at least one portion of the graphics guide is modulated with respect to at least one of space and time” as claimed in claims 1 and 13. A modulated graphics guide is distinct from a mere change in position of a graphics guide corresponding to a change in a position of an endoscope. Therefore, Fukunaga fails to teach or suggest every limitation of claims 1 and 13.

Claims 2 to 12 depend from claim 1. Claims 14 to 24 depend from claim 13. The dependent claims are believed to be allowable for at least the reasons given for claims 1 and 13. At least claims 2, 3, 7 to 12, 14, 15, and 19 to 24 are believed to be allowable for additional reasons.

Claims 2 and 14 claim, *inter alia*, varying “a transparency of the at least one portion of the graphics guide with respect to other portions of the graphics guide.”

Fukunaga teaches that an endoscope image preparation unit 16 can become transparent by thinning the pixels based on a preset degree of transparency. (See Col. 11, lines 44 to 48.) However, Fukunaga does not teach varying a portion of the endoscope image, much less varying “a transparency of the at least one portion of the graphics guide

with respect to other portions of the graphics guide”, essentially as claimed in claims 2 and 14. Fukunaga teaches that the entire endoscope image preparation unit can become transparent, but does not disclose varying “a transparency of the at least one portion of the graphics guide” essentially as claimed in claims 2 and 14. Therefore, Fukunaga fails to teach or suggest every limitation of claims 2 and 14.

Claims 3 and 15 recite, *inter alia*, varying “a transparency of the at least one portion of the graphics guide during pre-defined time intervals.”

Fukunaga teaches that the pixels forming the endoscope image A_i are thinned out according to conditions that include an adjustable degree of transparency. (See Col. 7, lines 59 to 64.) However, Fukunaga does not teach or suggest a pre-defined time interval. That is, Fukunaga does not teach or suggest varying “a transparency of the at least one portion of the graphics guide during pre-defined time intervals”, essentially as claimed in claims 3 and 15. Therefore, Fukunaga fails to teach or suggest every limitation of claims 3 and 15.

Claims 7 to 12 claims, *inter alia*, “said rendering step comprises modulating a transparency.” Claims 19 to 24 recites, *inter alia*, “said rendering device modulates a transparency.”

Fukunaga teaches that the pixels forming the endoscope image A_i are thinned out according to conditions that include an adjustable degree of transparency. (See Col. 7, lines 59 to 64.) However, Fukunaga does not teach or suggest modulating a transparency or that a rendering device modulates a transparency, essentially as claimed in claims 7 to 12 and 19 to 24, respectively. Fukunaga teaches a change in transparency of an endoscope image. “Modulating a transparency” as claimed in claims 7 to 12, and a

“rendering device modulates a transparency” as claimed in claims 19 to 24 are distinct from a mere change in transparency. Therefore, Fukunaga fails to teach or suggest every limitation of claims 7 to 12 and 19 to 24.

The Examiner’s reconsideration of the rejection is respectfully requested.

For the forgoing reasons, the present application, including claims 1 to 24, is believed to be in condition for allowance. The Examiner’s early and favorable action is respectfully urged.

Respectfully Submitted,

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MARKED UP CLAIMS

Please amend claim 13 as follows:

13. (Amended) An apparatus for augmented reality guided instrument positioning, comprising:

a graphics guide generator for generating a [graphic]graphics guide for positioning an instrument; and

a rendering device for rendering the graphics guide such that an appearance of at least one portion of the graphics guide is modulated with respect to at least one of space and time.